ance of this plant, which often grows to an enormous size, would be sufficient to suggest its employment in art. According to measurements of Dr. Julius Schmidt, who is not long since dead, and was the director of the Observatory at Athens, a number of these plants grow in the Valley of Cephisus, and attain a height of as much as two metres, the spathe alone measuring nearly one metre. [The lecturer here exhibited a drawing (natural size) of this species, drawn to the measurements above referred to.]

Dr. Sintenis, the botanist, who last year travelled through Asia Minor and Greece, tells me that he saw beautiful specimens of the plant in many places, *e.g.* in Assos, in the neighbourhood of the Dardanelles, under the cypresses of the Turkish cemeteries.

The inflorescence corresponds almost exactly to the ornament, but the multipartite leaf has also had a particular influence upon its development and upon that of several collateral forms which I cannot now discuss. The shape of the leaf accounts for several as yet unexplained extraordinary forms in the ancient plane-ornament, and in the Renaissance forms that have been thence developed. It first suggested the idea to me of studying the plant attentively after having had the opportunity five years ago of seeing the leaves in the Botanic Gardens at Pisa. It was only afterwards that I succeeded in growing some flowers which fully confirmed the expectations that I had of them (Figs. 10 and 11).

(*To be continued.*)

NOTES

THE International Conference on Education in connection with the International Health Exhibition will be opened on Monday, August 4, at 11 a.m., and will continue throughout the week. The arrangements as yet are not quite complete, but it is announced that the following papers, among others, will be read :—(1) Conditions of Healthy Education :—On the structure, fitting, and equipments of a school, by the Rev. Canon Holland, Canterbury, and Rev. E. F. M. MacCarthy, King Edward's School, Birmingham; on gymnastics and other physical exercises, by Captain Burney, R.N., Royal Hospital School, Greenwich, and H. J. Wilson, J.P., Sheffield; on the right apportionment of time to different subjects of instruction in schools of various classes, by H. W. Eve, University College School, London. (2) Infant Training and Teaching :—What Fröbel did for young children, by Miss Manning; on the relations of the Kindergarten to the various industries of a country, by Fräulein E. Heerwart; on the main work to be accomplished by Kindergartens for the people, and on the methods of training teachers in such institutions, by Madame Schrader, Berlin. (3) Technical Teaching—(*a*) Science, (*b*) Art, (*c*) Handicrafts, (*d*) Agriculture, (*e*) Domestic Economy :—On the methods of teaching the different branches of physical and of natural science, by Henry E. Armstrong, Ph.D., F.R.S.; the teaching of science in public elementary schools, by W. J. Harrison, Birmingham; science teaching in training colleges, by H. A. Reatchlous, Westminster Training College; on the teaching of drawing and colouring as a preparation for designing and decorative work, by John Sparkes, Science and Art Department, A. F. Brophy, Finsbury Technical College, and T. R. Ablett, London School Board; on technical teaching, by Prof. Garnett, University College, Nottingham, and E. M. Dixon, Allen Glen Institute, Glasgow; on technical teaching in Board schools, by J. F. Moss, Sheffield School Board; on manual training schools, by Prof. Woodward, St. Louis, U.S.; (*d*) the teaching of agricultural science in elementary, in intermediate, and higher schools, in evening science classes, in special colleges, and in the Universities, methods of teaching, &c., by the Rev. J. M'Clellan, Royal Agricultural College, Cirencester, J. Wrightson, Wiltshire Agricultural College, and others; on school farms and farm schools, by H. M. Jenkins, Royal Agricultural Society; on methods of teaching cookery in schools, by Miss Fanny Calder, Hon. Sec. Northern Union of Schools of Cookery. (4) Teaching of Music in Schools. (5) Museums, Libraries, and other Subsidiary Aids to Instruction in Connection with Schools :—On school museums, by Dr. Jex Blake, Rugby. (6) Training of Teachers :—By G. B. Davis, Birmingham, and C. Mansford, Wesleyan Training College, Westminster; on some of the differences which exist between the training, position, and duties of elementary teachers in Great Britain and on the Continent, by the Rev. Canon Cromwell, St. Mark's College, Chelsea; Universities and their relations to the training of teachers, by the Rev. R. H. Quick, Sedbergh; professorships and lectureships on education, by Prof. S. Laurie, University of Edinburgh, and Prof. J. M. D. Meiklejohn, St. Andrew's University; on diplomas and certificates and the registration of teachers, by F. Storr; on training colleges in Scotland, by the Rev. J. Morrison, D.D., Glasgow. (7) Inspection and Examination of Schools :—(*a*) By the State, by W. Kennedy, Glasgow; (*b*) by the Universities—on the University local examinations, by the Rev. G. F. Browne, B.D.; on the University extension movement, by Albert J. Grey, M.P., and E. T. Cook; by other public bodies, by the Rev. H. L. Thompson, Iron Acton. (8) Organisation of Elementary Education :—By Sir U. Kay Shuttleworth, Bart., and T. E. Heller; on the English system of elementary education—its growth and present condition, by the Rev. H. F. Roe, Sherborne. (9) Organisation of Intermediate and Higher Education :—On the requirements of a truly national system of higher education and the proper relation of the old Universities to such a system, by R. D. Roberts, Clare College, Cambridge; on the comparative advantages and disadvantages of arranging the course of study in the various school classes on lines of subjects appointed for local University or other general examinations, by the Rev. R. B. Poole, Bedford Modern School; on the advantages and disadvantages of providing for intermediate and higher education by means of a rate, as is done in the case of elementary education, by the Rev. Canon Daniel, and Hon. E. Lyulph Stanley, M.P.; on the organisation of higher education for girls, by Miss Beale, Cheltenham; on the curriculum of a girls' high school, by Mrs. Bryant, B.Sc. (10) Organisation of University Education :—On the proper relation between the teaching and examining bodies in a University, by Sir George Young, Bart.; on scientific teaching in a University, by Prof. Fleeming Jenkin; on the University education of women, by Mrs. H. Sidgwick; on the relation of a University to the colleges, by G. W. Hemming; on the relation of provincial colleges to a University, by E. Johnson, Nottingham; on the duties of the Universities to our Indian Empire, by Prof. Monier Williams.

HER MAJESTY has been pleased to confer a baronetcy upon Mr. Bernhard Samuelson, M.P., and a knighthood upon Prof. Roscoe, in consideration of the services rendered by them in connection with the Technical Education Commission. Sir Bernhard Samuelson well deserves the honour which has been conferred upon him; the services which he has rendered to science and to scientific education both in and out of Parliament, by his insisting for so many years on the importance of science to our national industries, is well known to all our readers.

"A NATURALIST," in a letter to the *Times* of yesterday, again draws attention to the scheme for a Marine Biological Laboratory, showing the practical utility of such an institution by quoting the report of Prof. Brooks on the researches on oysters carried out in the Marine Biological Laboratory founded by the Johns Hopkins University. In a leading article the *Times* very heartily supports the appeal of "A Naturalist" for subscriptions to the Marine Biological Association, an appeal which we hope will be liberally responded to.

IN a communication to us dated Helsingfors, June 23, Prof. Selim Lemström states that, having seen in NATURE that Dr. Sophus Tromholt has entirely failed in producing the artificial aurora borealis in Iceland with one of the "utströmnings" apparatus invented by the Professor, he ascribes this chiefly to the unusually adverse winter, heavy snowfall, and great moisture having frustrated nearly every attempt to produce the aurora in Sodankylä. It is remarkable, the Professor adds, that these circumstances have in no way affected the terrestrial currents, the measurements of which have been highly satisfactory.

THE second number of *La Nuova Scienza* fully maintains the promise of the first, lately noticed in NATURE. The editor, Prof. Enrico Caporali, who contributes most of the papers, continues to deal chiefly with the borderland between physics and metaphysics. His avowed object is to establish a new philosophy based on the reconciliation of idealism and the material order. Hence he revives the speculative doctrines of Campanella, Giordano, Bruno, and Vico, proclaims himself a follower of Kant, in so far as he accepts the Absolute as lying behind the relative, and denounces not only the French materialists but even the modern English Agnostic school. Thought, life, liberty, *la cernita*, that is, "selection" in the Darwinian sense, pervade all nature, the so-called material or inorganic as well as the organic world. Even crystals are "living beings, possessing not the turbulent fiery life of organised species, but a calm and stable life, feeling its harmony and unity, and ever seeking to adapt itself to the environment." And again: "Free selection has done everything in nature. The harmony of beings is the outcome of a long, persistent, unflagging work of fruitful selections inspired by Unity," that is, by the Absolute. In the present number the leading papers are:—"Modern Italian Thought," "The Pythagoric Formula of Cosmic Evolution," and "The German compared with the Italian Anti-clerical Movement."

DR. GLASENAP continues to give in the *Novoye Vremya* further details concerning Russian private observatories. Dr. Endrzeewitsch's observatory at Plonsk is provided with two equatorials, the objectives of which have respectively 162 and 140 mm. diameter; an equatorial telescope, the objective of which is 108 mm.; a transit instrument, three spectroscopes, a Secchi solar eye-piece, and a rich collection of meteorological and physical instruments. Although engaged in the medical profession, Dr. Endrzeewitsch displays a rare energy in the observations of comets, minor planets, Jupiter's satellites, and double stars. His observations of double stars are considered by astronomers as most accurate. General Mayevsky's observatory at Pervino, close to Torjok, is provided with a 6-inch refractor with parallactic motion, and with a transit instrument. Although M. Mayevsky makes observations only during the summer months, his measurements of some double stars and of stars situated in that part of the sky where the moon will be during the next total eclipse of October 4, are worthy of notice. His scientific work is usually described in the Annual Reports of the Pulkowa Observatory.

A DISEASED coffee leaf from Natal has been transmitted to Kew by Prof. Macowan, Director of the Botanic Garden, Cape Town. It has been examined by Mr. H. Marshall Ward, lately employed by the Government in the investigation of the coffee disease in Ceylon, and he finds it attacked with a typical form of the fungus *Hemileia vastatrix*, to which the well-known leaf-disease of that colony is due. This is the farthest westward extension of the disease at present. Eastward it has long maintained a position in Fiji.

PROF. BONNEY asks us to state that the paper which he has promised to the Montreal meeting of the British Association is not, as inadvertently stated in NATURE (p. 218), "On the Archæan Rocks of Canada, &c.," but "On the Archæan Rocks of Britain." Prof. Bonney has not yet visited Canada or examined many of its rocks.

ACCORDING to the *Times* Paris Correspondent, M. Pasteur's experiments with the virus of hydrophobia are going on with unbroken success. He has thus far experimented on 57 dogs, 19 of them mad and 38 bitten by them under uniform conditions. Out of these 38 half had been previously inoculated, the other half not. The latter, without a single exception, died with unmistakable signs of hydrophobia, whereas the 19 others are about and as well as ever. They will be watched for a year by veterinary doctors to see whether the inoculation holds good permanently or only temporarily.

AS to chemical *research* in England we print Dr. Perkin's address in another column. As to chemistry as a *trade* we are requested to state that a petition, signed by Prof. Odling, M.A., F.R.S., &c., Professor of Chemistry in the University of Oxford, and others, has been presented to Her Majesty in Council praying for the grant of a charter of incorporation, under the title of the Institute of Chemistry of Great Britain and Ireland. The petition has been referred to a Committee of the Privy Council. The trade seems distinctly to have the best of it!

MR. STANLEY is reported at St. Paul de Loanda to have sailed for England on June 8.

THE city of Rouen has organised in connection with the Concours Regional an exhibition of electricity for the whole of France, and a special exhibition of Algerian products. The number of electrical lamps, regulator and incandescent, is very large, about 400 Swan, some Maxim, 30 Breguet regulators, about 30 Jablokhoff, and 5 or 6 sun lamps. One of the most interesting features is the special exhibit by the Association des Propriétaires of steam-engines of Normandy, who have collected a large number of boilers which have exploded, with labels indicating the causes of explosion.

DR. GULDBERG writes to us with reference to his recent article on the North Cape Whale (vol. xxx. p. 148), that he stated that one of these species of whale was taken at Pampeluna (an inland town); what he meant to have stated was that it was taken at San Sebastian, and brought to Pampeluna. He also finds that Taranto was given as Toronto. Dr. Guldberg informs us that one specimen more of the North Cape Whale has been captured, viz. at Guetaria, not far from San Sebastian, on February 11, 1878; the omission was due to the fact that his article was written during his stay at Liége, where all his books of reference were wanting.

THE additions to the Zoological Society's Gardens during the past week include two Diana Monkeys (*Cercopithecus diana* ♂ ♀) from West Africa, presented by Mr. J. H. Cheetham, F.Z.S.; a Bonnet Monkey (*Macacus sinicus* ♂) from India, presented by Mrs. Norman Yonge; a Razorbill (*Alca torda*), British, presented by Lady Hayter; four Snow Birds (*Junco hyemalis*), an American Coot (*Fulica americana*) from North America, presented by Mr. F. J. Thompson; a Hutchins's Goose (*Bernicla hutchinsi*) from Arctic America, a King Vulture (*Gypagus papa*) from South America, presented by Mr. W. A. Conklin, C.M.Z.S.; a Barn Owl (*Strix flammea*), British, presented by Mr. M. B. Windus; two Angulated Tortoises (*Chersina angulata*), two Areolated Tortoises (*Homopus areolatus*) from South Africa, two Geometric Tortoises (*Testudo geometrica*) from Little Namaqualand, presented by the Rev. G. H. R. Fisk, C.M.Z.S.; two Ceylonese Terrapins (*Clemmys trijuga*) from the Island of Diego, Garcia, presented by Commander the Hon. Foley C. P. Vereker, R.N.; a Pale-headed Tree Boa (*Epicrates angulifer*), an Antillean Snake (*Dromicus antillensis*), two Maculated Snakes (*Ungalia maculata*) from the Island of New Providence, Bahamas, presented by Mrs. Blake; a Tuatera Lizard (*Sphenodon punctatus*) from New Zealand, presented by Surgeon-Major

G. Henderson; a Spotted Cavy (*Cœlogenys paca*), a Blue and Yellow Macaw (*Ara ararauna*) from South America, deposited; a Blue Crested Tanager (*Stephanophorus leucocephalus* ♂) from Brazil, two Cape Doves (*Œna capensis*) from South Africa three Hardwicke's Spur Fowl (*Galloperdix lunulata* ♂ ♀ ♀), two Rufous Spur Fowl (*Galloperdix spadicea*), two Rain Quails (*Coturnix coromandelica*) from India, three Blackish Sternotheres (*Sternothærus subniger*) from West Africa, purchased; a Heloderm (*Heloderma suspectum*) from Mexico, received in exchange; a Burrhel Wild Sheep (*Ovis burrhel* ♂), a Red Deer (*Cervus elaphus*), six Upland Geese (*Bernicla magellanica*), five Long-fronted Gerbilles (*Gerbillus longifrons*), bred in the Gardens.

OUR ASTRONOMICAL COLUMN

Minima of Algol.—In the calculation of the following Greenwich times of geocentric *minima* of Algol, the later observations of Schmidt have been brought to bear:—

		h.	m.			h.	m.
August	12 ...	14	35	September	24 ..	14	43
	15 ...	11	23		27 ...	11	31
	18 ...	8	12		30 ...	8	20
September	1 ...	16	14	October	14 ...	16	23
	4 ...	13	3		17 ...	13	12
	7 ...	9	51		20 ...	10	0
	12 ...	17	54		23 ..	6	49

It is much to be desired that the observation of this star should be taken up in a systematic manner by one or more observers. We have been indebted to the late indefatigable astronomer at Athens for nearly all the published determinations of *minima* during the last ten years.

The Comet 1858 III.—Herr Spitaler, of the Observatory at Vienna, who has been searching for some time past for this comet with the 27-inch refractor along the track defined by the calculations of M. Schulhof, remarked on May 26 three small, faint, uncatalogued nebulæ, of which, owing to rapidly-advancing clouds, he was only able to secure the following approximate places:—

		h.	m.	s.			°	′
1.	Right Ascension ...	17	40	50 ...	Declination ...	+	35	33
2.	,,	17	42	0 ...	,, ...	+	35	33
3.	,,	17	42	10 ..	,, ...	+	35	33

A period of almost unexampled bad weather followed, and it was not till June 17 that observations could be repeated: the first of the three nebulæ was then missing, and its disappearance from the position where it had been observed on May 26 was confirmed with the same instrument on the night of June 20. Its place is close upon that given in M. Schulhof's ephemeris if the comet's mean anomaly is assumed to have been 8° 33′ at midnight on May 26.

It is not clear from what elements the positions assigned in the sweeping-ephemeris have been derived. In M. Schulhof's most probable orbit the period of revolution is 6·61 years. If we assume four revolutions to have taken place between 1858 and 1884, we find a period of 6·478 years, and reducing by the factors for $d\mu$ in *Astron. Nach.* No. 2592, in the most probable ellipse, and bringing up the longitudes to May 26, 1884, we have the following constants for the comet's equatorial co-ordinates:—

$$x = r\,.\,[9{\cdot}99985]\,.\,\sin\,(v + 291^\circ\ 27'{\cdot}5)$$
$$y = r\,.\,[9{\cdot}99890]\,.\,\sin\,(v + 201\ \ 33{\cdot}8)$$
$$z = r\,.\,[8{\cdot}87720]\,.\,\sin\,(v + 181\ \ 14{\cdot}6)$$

If the true anomaly, May 26·5 G.M.T., be assumed to be 49° 36′·6, we find that the calculated right ascension agrees with that observed, but the calculated declination is 3° 34′ too small. And M. Schulhof's definitive orbit for 1858 shows a similar discordance in declination, when the computed and observed right ascensions are made to agree. A comparison (made as a check) with the observed longitude and latitude leads to the same inference. It will be of interest to learn upon what elements M. Schulhof has founded his predictions.

If the comet's mean period between 1858 and 1884 were about 6·478 years, it might have approached the planet Jupiter in the middle of September 1880, within 0·97 of the earth's mean distance from the sun, a sufficiently near approach to cause a sensible, though not very important effect upon the elements defining the position of the plane of the orbit.

The intervention of unfavourable weather at Vienna after May 26 was particularly unfortunate, as the comet in the observed position would be receding from both earth and sun, and consequently the intensity of light would be rapidly diminishing, thus rendering a further observation after June 17 almost hopeless. It will remain for M. Schulhof to decide whether the object observed and missed at Vienna was really the comet the return of which he had led astronomers to expect, or another body. Possibly the discordance noticed above may be explained by error in the orbit as printed.

THE PHYSIOLOGICAL BEARING OF ELECTRICITY ON HEALTH[1]

THE reader of the paper commenced by stating that electricity as at present used is at once a source of danger, a possible cause of sickness, and a remedy.

In all these cases it has been insufficiently studied, and continues to be ill understood. This condition of affairs is probably due to the fact that from the great subdivision of modern science, a competent knowledge of physics as well as of physiology is rarely acquired by the same person, whereas, for accurate work it is essential that so powerful an agent should be measured by accepted units. What little has been done by the physiologists is marred by considerable errors as to the force actually in use. Indeed much of it requires total revision in the light of modern discoveries.

1. Dangers to sight were very briefly considered. It was noted that the incandescent and the arc light subjected the eyes to two totally different risks, the former from heat rays at the less refrangible, and the latter from actinic and chemical action at the more refrangible, end of the spectrum. To obtain a sufficient protection in both cases, a pair of eye-protectors, made for the speaker by Mr. Baker of High Holborn, was shown, in which the front glass was blue, and the side "blinker" deep red. The former could be used alone for incandescent lamps, to remove glare, and lessen irritation; while the side glass could be turned down over the blue when powerful arc lights had to be gazed at. If the two tints were well selected and combined by means of the spectroscope, a very handy and simple appliance was obtained, clearly conducive to health. 2. Dangers to life and health were more minutely adverted to. Causes of death may be:—(1) By catalytic action; (2) by thrombosis of the larger vessels; (3) by shock and syncope, due to action on the cardiac nervous system. It was admitted that, considering the enormously increased power of our modern sources of electricity, accidents had been singularly few; and indeed it was abundantly proved that a large steady current, even of considerable magnitude, was comparatively harmless to the human economy. Rapid fluctuations, especially at the starting or breaking of the circuit, were much more dangerous; and still more so if by accident, or by the impregnation of the skin with conducting saline solutions, the resistance of the body was reduced to a minimum. In reviewing the recorded accidents, at the Birmingham Music Hall, in Paris, at Hatfield, and on board the Russian yacht, it was obvious that they were not all to be classified under the third heading given; inasmuch as life in some cases had been prolonged for three-quarters of an hour after the accident. Probably thrombosis in some form would account for them; but more precise information was much needed. Dr. Stone then proceeded to consider certain remedial and physiological points. 1. Several common errors were corrected, especially that of imperfect contact. 2. Any approximate determination of the electrical resistance of the human body to low and high tension currents respectively was described. 3. Use of the telephone and meter-bridge for measuring this resistance demonstrated; and 4. Measurements of E.M.F. of high tension alternating currents by dynanometer and quadrant electrometer were given. Much of this had already appeared in the pages of Nature on June 14 and September 13, 1883, and on April 3 of the present year. The great need for an electrical testing establishment open to observers at large, like that at Kew, was insisted on, and might well be undertaken by the Society. Lastly, a few suggestions were thrown out as to the therapeutical uses to which electricity, administered, not as now, haphazard, but quantitatively and scientifically, might be put. These were classified as (1) muscular, (2) sensory, (3) neurotic, (4) eliminative, (5) vaso-motorial.

---

[1] Abstract of a paper by W. H. Stone, M.A., M.B. Oxon, F.R.C.P., Member, at the Conference of the Society of Telegraph Engineers at the Health Exhibition, July 4.